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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,955	08/18/2003	Takumi Mikawa	10873.1284US01	4147

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EXAMINER

CHEN, JACK S J

ART UNIT PAPER NUMBER

2813

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No. 10/642,955	Applicant(s) MIKAWA ET AL.	
	Examiner Jack Chen	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 4-7, 10-12 and 14-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 9 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/24/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

In response to the communication filed on February 25, 2005, claims 1-17 are active in this application.

Applicant's election of the invention of Group I, species I (figs. 1A-1J), with claims 1-3, 8-9 and 13 indicated by Applicant to read thereon in the reply filed on February 25, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 4-7, 10-12 and 14-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention/species, there being no allowable generic or linking claim.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement filed on November 24, 2003 has been considered.

Oath/Declaration

Oath/Declaration filed on August 18, 2003 has been considered.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 8, the phrase "**the surface** of the conductive layer" lacks antecedent basis.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graettinger et al., U.S./5,843,830.

Graettinger et al. discloses a method for manufacturing a semiconductor device, comprising: forming a conductive layer 60 on a first insulating layer 36 formed on a substrate 30, and on a contact plug 38 formed in the first insulating layer (fig. 2); forming a capacitor element lower electrode 60 by patterning the conductive layer (fig. 4); forming a second insulating layer 80 on the first insulating layer and the capacitor element lower electrode (fig. 6); forming a recess in the second insulating layer at a region above the capacitor element lower electrode (fig. 8); planarizing the second insulating layer by polishing (fig. 7); exposing the capacitor element lower electrode (fig. 8); and forming a capacitive insulating film 90 (fig. 9) and capacitor element upper electrode 100 (fig. 10) above the capacitor element lower electrode, see figs. 1-10 and cols. 1-8 for more details.

Graettinger et al. teach forming a capacitor by using the above techniques; although the method for forming a plurality of capacitors were not shown by Graettinger et al. in the related

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text. But one having ordinary skill in the art at the time the invention was made to using the same techniques for forming a plurality of capacitors on the same substrate in order to produce a plurality of semiconductor devices for the IC device. Therefore, these claims are *Prima Facie* obvious over Graettinger et al.

Re claim 2, wherein the step of exposing the capacitor element lower electrodes is carried out by etchback (figs. 7-8, col. 5, lines 7-14).

Re claim 3, wherein the step of planarizing the second insulating layer by polishing is carried out by CMP (fig. 7; col. 4, line 66 to col. 5, line 7).

Re claim 8, wherein (due to the 112 problem, as best can be understood by the examiner) the conductive layer 60 is made of Pt (fig. 3; col. 4, lines 40-45).

Re claim 9, wherein the step of forming a recess in the second insulating layer is performed by dry etching (figs. 7-8, col. 5, lines 7-14).

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graettinger et al., U.S./5,843,830 in view of Gardner et al., U.S./6,210,999 B1.

Graettinger et al. disclosed above, and in particular col. 4, lines 60-65 and fig. 6 shows using silicon oxide for the second insulating film. However, Graettinger et al. are silent to using CVD method for forming the oxide film.

Gardner et al. teach a method for forming a semiconductor device, which includes forming the silicon oxide film 22 (fig. 2 and col. 7, lines 22-35) by atmospheric CVD using TEOS as the source in order to provide a highly conformal dielectric.

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to use CVD oxide as taught by Gardner et al. in

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the method of Graettinger et al. in order to provide excellent purity, uniformity and conformal step coverage.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Chen whose telephone number is (571)272-1689. The examiner can normally be reached on Monday-Friday (9:00am-6:30pm) alternate Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead can be reached on (571)272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jack Chen
Primary Examiner
Art Unit 2813

May 16, 2005